31-05-95 - 10:40AM

COOP'S TECHNOLOGY DIGEST

-A Timely Report On The World Of Communications-

Published as a confidential industry newsletter ten times per year by electronics and technology author *Robert B. Cooper*. Reports source checked for accuracy prior to publication; readers are cautioned to conduct their own verification of data prior to formulating business judgements based upon reports here. Data of unverified authenticity may be so-labeled as a guide to reader caution. The publisher draws upon 35 years of leading edge electronic industry media experience but can be mislead by those with clever agendas. *Entire contents Copyright 1995* by Robert B. Cooper; when 'lifting' material please be courteous enough to credit source (*"As reported in Coop's Technology Digest for ...."*). CTD accepts no advertising nor source payment for publication of material here. Making "extra copies" for staff use is prohibited without our written permission. Corporate libraries copying this publication for distribution are in violation of our copyright; please query for reasonable reproduction rights. Subscription rates and contact numbers at bottom of this page.

May 31, 1995 / ISSUE 95-5-18

-IN THIS ISSUE-

FEEDBACK: Who Will Own Cable TV Rights?
Gaining Access to **Easements** -p.3; The Power of **NOS** -p.4
GALAXY SHIFTS: From 'Free TV' to Pay TV
Delayed Film Release **Window** -p.7; Video EZY Declares **War** On Galaxy -p.7
Truth Not An Essential Ingredient -p.8; **GI Out**: Pace + NTL In -p. 9;
The 'Modem' **Problem** -p.9; Can New Zealand **Play** In This Game? -p.11
TECHNOLOGY BYTES / INDUSTRY NEWS UPDATE
PanAmSat 2,000 Dish **Give-away** -p.12; Optus Moves B3 into **Firing Position** -p.12;
MTV, Turner Announce **Encryption** and Distribution Plans -p.13; In Orbit **Synopsis** -p.13;
STARnet to **"Skip"** Australia -p. 14; Australian **'Porno Flick'** Channel for PanAmSat Ku? -p.14;
Russian Express Class Satellites On **'Hold'** -p.15; Patent **Battle** Over Satellite Encryption Rights -p.16;
Telecom NZ Told To **Pay Rates** For 'Space' -p.18; Seven Network **Joins** Optus Vision Pay-TV Package -p.19;
Telecom Parent BA **Changes Mind** About Fibre Optics -p.20; Solomons Want TV: **TVNZ In Running** -p.21

REACHING CTD: Telephone (64) (0)9-406-0651; 24 HOUR FAX (64) (0)9-406-1083
NEXT ISSUE DATE: 30 JUNE 1995

COOP'S TECHNOLOGY DIGEST / SUBSCRIPTION INFO

There are ten (10) issues per year on a schedule dictated by industry events. The readership includes telecommunication industry consultants, broadcasters/telecasters, brown goods importers, retail stockists, installation and maintenance firm personnel, educators, regulatory agencies, business investors and Arthur C. Clarke. All copies sent via airmail / Fast Post. Annual subscription NZ$250 per year within New Zealand, US$250 per year outside. In Australia, CTD is represented exclusively by AV-COMM Pty Ltd, PO Box 225, Balgowlah NSW 2093: Tel. (61) 2-949-7417; Fax. (61) 2-949-7095. Outside of Australia, make payment out and mail to:

ROBERT B. COOPER, P.O. BOX 330, MANGONUI, FAR NORTH (NEW ZEALAND)

COOP'S TECHNOLOGY DIGEST

May 31, 1995 ◆ VOLUME 95-5-18

COOP'S TECHNOLOGY DIGEST is published 10 times each year by Robert B. Cooper; full contents Copyright 1995 and may not be reproduced in any format without our written permission.

FEEDBACK: Who Will Own Cable TV "Rights?"

Editor's notation: Our Volume 95-1-14 (January 20, 1995) explored the "novel" approach to cable television distribution under trial by Pacsat Communications in the South Island community of Greymouth. In this system, entrepreneur *John Gordon Rutherford* has wired (installed coaxial cable) within individual municipal "blocks" and treats each block as a stand alone cable distribution system. Television programming is fed into the blocks via a 12 GHz microwave transmitter on high ground, received within each block by a stand alone microwave receiver. Rutherford calls his approach "Cellularvision" thinking of each municipal block as a "cell" within a larger universe of similar stand alone cells. In doing this, Rutherford believes he has overcome the physical constraints of normal cable TV where cables are strung on existing utility poles (by agreement with the utility company), or buried using public easements and rights of way. Our review of his approach in January questioned the wisdom of this approach and suggested that within the cable television business universe the lack of a contiguous, interconnected cable television network of cabling might be a detriment if Rutherford ever needed to raise financing for his operations or wished to sell his assets. In short, lacking the physical assets of cable and amplifiers and the continuity attendant to such an interconnected cable TV "plant," how might potential investors or buyers view his system?

Those concerns were our own and drew upon the world-wide experience in cable television to this point in time. There is of course another side to this concern and we share that with you here. The writer is John G. Rutherford, the majority owner of the Greymouth system.

"*Your recent article* on the cellular communications system I have been working on for some years deserves commendation for perceptiveness and the depth of research. However, I feel comment on some of the points you raise is warranted because your mindset is perhaps coloured by your extensive experience in the North American cable television industry. I also fear that anyone reading your report not from New Zealand or Australia could come to incorrect conclusions involving just how the laws here subtly mould and form the young cable TV industry in the South Pacific. Conditions are different here from say North America and the conditions which have lead to the now well known tree and branch design of traditional cable television plants may not apply to the circumstances in a country such as New Zealand where not only our laws and regulations but our approach to economic models differs. Your report suggests that lacking the familiar 'tree and branch' form of (North American) cable, that our cable TV here may not be cable at all. I believe that would be an incorrect conclusion and I will attempt to show you why.

"*In your report* you address 'easements' and 'rights of way' from a perspective of a North American. There are subtle differences in law at work here. Australasian land law is such that when a street becomes vested in a council after land is developed by the developer, existing easements and rights of way in effect during the time of the developer are wiped out and no longer apply. On the other hand, an easement granted for a private piece of property can be in perpetuity and registered as such on the title.

"(Local and district) *councils, like parliament,* cannot bind their successors and suing councils for breach of contract is a perilous business because they have the legal right to change their minds on administrative, policy and town planning issues. Thus a permit from a council, unlike its' North American counterpart (called a 'franchise'), could easily be reversed under New Zealand law. It follows that a cable operator who negotiates individual (private) cable 'easements' and who registers those easements is in the best possible position to pass on to his own successors, heirs or assigns the legal rights necessary to own and operate a cable television system in perpetuity in New Zealand. It is my view that the combination of privately negotiated cable passage easements and the government's Network Operator Status is the best foundation for cable operations here.

"*In your report* you imply that cables placed on the streets form a tangible asset and lacking this tangible asset (or the promise that debt funding will create such a tangible asset) one's ability to attract investors in cable television in the (south) Pacific is in some jeopardy. I suggest this is a cyclic matter. For example, in the late 1980s a number of well known North American cable TV MSOs came to New Zealand to study our needs and the business opportunities here. Our approach at the time was a street based cable TV system, not dissimilar to those elsewhere. A US$20 investment was voided at the last possible moment when a report appeared in a major US banking journal warning bankers not to roll over maturing loans in favour of high cash flow companies whose assets consisted of cable and electronics installed on poles the cable companies did not own! It is no surprise to me that following this banking moratorium in North America in cable TV loans that major cable MSOs changed their tactics and began to move off of pole space they leased from local utility firms in favour of buried cable plants where they would not be at the mercy of over zealous utility companies.

"*If leasing pole space* from a utility company is risky in the minds of the banking community, and the major cable MSOs believed they would offset this risk by placing their cables underground, why is that not a suitable format for New Zealand? A fair question.

"*Street work* for the purpose of maintaining or improving a roadway is now considered a threat to the environment but one that must be accepted in lieu of dangerous roadways. Not so the tearing up of streets, sidewalks and pathways for purposes not related to their maintenance or improvement. As a land developer of considerable experience, it was a shock to me to see how the original intent of the environmentally oriented Resource Management Act (1991) would become perverted and rewritten by those intent on delaying or stopping any activity in their neighbourhood which threatened to change their existing scenery. A buried cable television plant goes underground only after considerable trenching has taken place and the residue left behind (i.e., the fibreglass equipment housings that pop up like mushrooms at each property line) serve as a permanent sore under the skin of those who oppose anything manmade mounted on the ground.

"*Witness the growing* aversion by Councils to new streetworks and the strong move towards encouraging utility operators to collocate kiosks and other structures remote from the streetscape. This is progressively being expressed in the current rash of District Plans that are flowing from the adoption of the Resource Management Act. Typical is Hamilton City which has adopted a regulation requiring cellular telephone masts to be no greater than 15 metres in height supported by an electronics 'container' no larger than 5 cubic metres. All of these new wave activities are to the detriment of a prospective cable television operator who is, in the end, only attempting to place his cable lines such that they can serve potential customers.

"*Your January report* suggests that cable lines located solely or largely upon privately owned property could have no or diminished resale value. I would be very surprised to learn that cable firms in North America do not list on their balance sheets the asset value of the drop cable that crosses private (subscriber) property into the home as well of course as the electronics at the home end of the drop; i.e., the typical set-top cable converter. Very recently an American MSO visiting me in my home affirmed the changing view of system assets by pointing out that with the arrival of interactive (two-way) system technology, the value of the on-premises hardware actually inside the home of the cable customer has risen dramatically. It has not been that long ago that a cable operator looked upon each prospective home as a shared cost of the complete cable TV plant investment in the dollar region of US$300 per home passed by the cable. It is no longer unusual for each actual subscriber to now have US$300 in cable supplied electronics inside of the home.

"*CTD's support* for streetbased cable systems is founded on the US system where the local authorities do grant a franchise. The most recent (US) legislation, the Cable Act of 1992, continues to treat cable as an 'enfranchisement operating within public easements.' Conversely, the New Zealand cable operator draws his right to operate from the Telecommunications Act of 1987 (as amended) through the Network Operator (Status) administered by the Ministry of Commerce. Unlike US law where the community council or town supervisors grant a franchise for a specified term, Network Operator Status (NOS) is in perpetuity as long as the grantee is making use of the privileges thus conferred (*). NOS is similar in many ways to the 1870's legislation granting to gas companies the rights to install piping for the transport of their commodity. Likewise, New Zealand Telecom and the electrical utilities have powers that are framed along similar logic. This legislation goes far beyond the easements and rights of way given by local authorities and pole owners in the US, for example.

"*Under NOS* the only involvement of the local council is through resource consent hearings relative to the use of the streets under the Resource Management Act. The Telecommunications Act grants the network operator the right to enter and maintain cables on private or public land and retain ownership of these cables (and attachments such as the electronic equipment). This is a very powerful licence and is much the preference to dealing with individual council authorities subject to the influence of those to whom they owe political support and allegiance.

"*In my cellularvision* concept, it is our choice to bypass all of the problems attendant with routing cables through municipally controlled streets. Our firm believes that our NOS is better utilised to deal with privately owned properties and to establish a plurality of redistribution sites. Some decades in the past there was a brief period of time where entrepreneurs realised that elevated mountain and hilltop sites offered valuable coverage potential for line of sight VHF and UHF transmission systems. They bought up these locations and have in turn leased back use of these sites to broadcasters and communications companies. These strategic sites are today considered very valuable assets. I suggest that in the coming years any location through which satellite delivered intelligence flows will appreciate in value in a similar manner. In fact, I envision

---

*/ **Network Operator Status** is granted by the Ministry of Commerce acting from an application submitted by a qualified applicant. For information contact Nicky Hadley, Communications Division, Ministry of Commerce, PO Box 1473, Wellington (Fax: 04-499-0797). During May, NOS was granted to Cyberstar of New Zealand and Barryvision Limited.

our one-per-block cellularvision sites to appreciate in value for precisely that reasoning. I further suggest sizeable fortunes will be made by those who recognise the value of such 'sites' now and move to create them in suburban areas throughout New Zealand. The banker of the next decade will still be more apt to fund a project based upon real estate holdings (whether owned or held under long term lease) than he will to loan money based solely upon wires and decoder boxes. I agree with Fortune Magazine's recent review that the technology fortunes of the next millennium will be built upon the flow of information; that information will transcend electricity as the most powerful tool of mankind. Those who pioneer patents in the fields of information transfer, and those who position themselves to be 'gateways' for their communities or region will be the fortune holders of the next era.

"*It has been our* experience to date that those who see our cellularvision approach to cable TV as 'wrong' have not really considered the alternatives. They seem convinced that dealing with a large number of individuals is inferior to working their way through Resource Management applications, appeals, environmental lobbies and other delays endemic to working in public places. I point as an example at Kiwi Cable where for many years they have been forced to install their aerial cables only on one side of many streets (the side where the power company has poles), and being placed in the position of refusing service to those who live 'on the opposite side'. They ended up in this position because Telecom NZ refused their requests to rent telephone company pole space for their wires and they were therefore limited to 'half service' to only those who lived on the 'power company pole' side of the street. Contrast that with our experience in Greymouth: People living in blocks not yet cabled stop our service vans in the street asking 'When will we get cable TV?' If we explain that we have no plans to cable their 'block' because we have no customers there yet, or too few customers to warrant the cost of the mini-headend, the normal occurrence is that someone in the block region takes the initiative and actually goes door to door for us to solicit support for the service! This community spirit has certainly been a significant force in respect to the additional television channels provided within Greymouth.

"*Our experience* in Greymouth is that people regard a cable coming into their property for what they view as an essential service (telephone, electricity and now television) as an asset rather than a detraction. We believe the 'small is beautiful' syndrome will develop from strength to strength and as more community leaders discover our approach, they will be attracted as we have been to the reinvention of cable TV 'Kiwi Style.'"

MORE THAN A TRADE SHOW: **AN EVENT**

JANUARY 1996

TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
23	24	25	26	27

SPACE Pacific South Pacific Region Satellite Cable Show

✓3 Exhibit Halls
✓3 Lecture Theatres
✓International Speakers from throughout Asia, North America, the Pacific

First invitations to attend in the mail to SPACE Pacific *Members August 15th*

REVISIT:

Australis / Galaxy Shifts From Free to Pay

As reported in CTD for April 28, MDS distributed pay television provider Australis / Galaxy has now successfully launched a nine channel service which sells for A$99 installation and A$49.95 per month. Our SatFACTS Monthly for May 15th detailed the nine channel offering which was expanded from a prior 6 channel service to the full compliment of 9 only at 2PM on the 30th of April. Prior to May 1st, the service was available to subscribers without the monthly fee as Galaxy did not believe it could collect the monthly fee until it had a full service functioning.

The opposition is lining up for a battle. And the players in the game are repositioning themselves to maximise their profit opportunities if the system does succeed.

The External Opposition

Full page newspaper advertisements in Sydney, Melbourne and Perth newspapers headline the sales message:

"GALAXY BRINGS THE MOVIES HOME TO YOUR PLACE"

The full page promises "*2 channels, 600 movies a year*" and lists a toll free (800) number for information and subscription orders. The two movie services, 'Encore' and 'Showtime', are largely imported from North America where they originate at the TCI near-Denver uplink site, are sent via US domestic satellite to the west coast of the U.S. using General Instrument Digicipher I format. At a temporary site near Sylmar, California, the PanAmSat Pacific Region uplink centre receives the twin digital transmissions, decodes them from NTSC Digicipher to baseband video and audio and then re-uplinks them in Scientific Atlanta MPEG 1.5 format through PAS-2 transponder 9V. The signals are then converted back to baseband video and audio and with modest modification re-uplinked now in Digicipher 1 NTSC format to Optus B1 at 160.0E.

The Showtime movie package includes films that are within the time window that the motion picture industry has created for feature film release to pay television. Traditionally, movies are first released for theatre showing; a period that seldom exceeds six months from the first showing. Immediately following the 'theatre window' comes the video rental store 'window'; a period during which features are available only on rental. Towards the end of the rental store 'window' the films may also be released through such minor outlets as in-hotel pay per view systems, and airline motion pictures. It is only after these twin cycles are completed that films find their way into the 'premium schedules' for services such as Showtime. A film may be as much as 10 months after its theatre debut when it first appears on 'premium pay TV'; in North America.

To gain more revenue dollars from pay TV customers, many U.S. cable TV systems have installed equipment that allows them to sell the movie on a per-view basis (pay per view or PPV). This means that homes connected to cable who wish to view a feature film after its theatre run but before its "premium channel" (i.e., Showtime) run can in such systems opt to have the movie sent into their home for a fee that averages around US$4 per feature. In terms of the release windows, this PPV 'preview' to regular pay-TV occurs slightly after the films first appear in the video rental stores and for typical viewing fees that approximate those charged by the rental stores. It is only after theatres, rental stores, pay per view and premium TV have finished with a film that it is available for use by (commercial) broadcast television stations and networks.

Within North America, which is treated as a single homogenised market by the feature film distributors, all of this happens with great monotony and repetition. International distribution, such as the exporting of American films to Australia (New Zealand) creates new problems. For a number of to-them sound reasons (including a paranoia concerning illegal distribution and duplication of film masters sent outside of the U.S.), North American feature film distributors typically delay the export of major films for up to six months. This simply means that a film that is just appearing for the first time in Sydney or Auckland may be going out for rental at the corner video store on the same day in Los Angeles. This further means that features released for U.S. operated premium services such as Showtime will be going into private homes via premium cable at about the same time as they are first appearing in Australian video rental stores. In each instance, the features are ahead in the release cycle of North America by one or two full release steps to their release 'down here.'

Setting aside the obvious small-scale entrepreneurial business opportunities this creates for Qantas flight personnel (bringing back brand new feature films on videotapes from Los Angeles is a common sideline for airline personnel), this release cycle delay creates new problems for the feeding of the Showtime service via satellite from a TCI uplink near Denver. The same movies being released on Showtime in America cannot be released simultaneously in Australia for if they were, the video rental business in Australia would evaporate faster than you could say Qantas.

None of this mattered much before the satellite television era. Now, however, U.S. networks such as CNN schedule daily 'Entertainment Report' programmes (such as Showbiz Today) which chronicle the newest theatre and video store releases in real time: Real time, that is, in North America. Such reports, generously illustrated with film clips provided by the film distributors, have the unfortunate effect of reminding Australian and New Zealand viewers that they are not only outside of the main stream, they are barely in a tributary when it comes to the movie release cycle. This complicates the marketing world for Galaxy which is trying its best to convince people that "*600 movies a year*" brought into their home via the premium movie service is a good deal. What Showtime does not do is bring into the home "*movies of current vintage*." They may, in truth, be so old that by the time they arrive on Australian in-home Galaxy subscriber TV sets they are long forgotten even at the local Video EZY store.

The Australian video outlets have mounted their own anti-pay-TV marketing campaign to point out to Australian consumers the folly of being a Galaxy subscriber. One full page advertisement from Video EZY headlines:

"IF YOU HAVE MONEY TO BURN AND ALL OF THE TIME IN THE WORLD, CONSIDER PAY TV."

The advertisement then goes on to point out:

> *"To get Pay TV, you'll spend around $300 setting up costs, at least $40 a month in rent and then wait 12 months to watch most movies. OR, you can spend $6.00 at your local video store and watch the same movie NOW."*

The advertisement closes with: "Video Vs PAY TV: A matter of time and money."

The numbers ($300 / $40) are inaccurate (A$99 and A$49.95) and this inaccuracy set the stage for a second full page anti-pay-TV advertisement that would appear next.

"I LIKE THIS PAY TV"
"NOT"

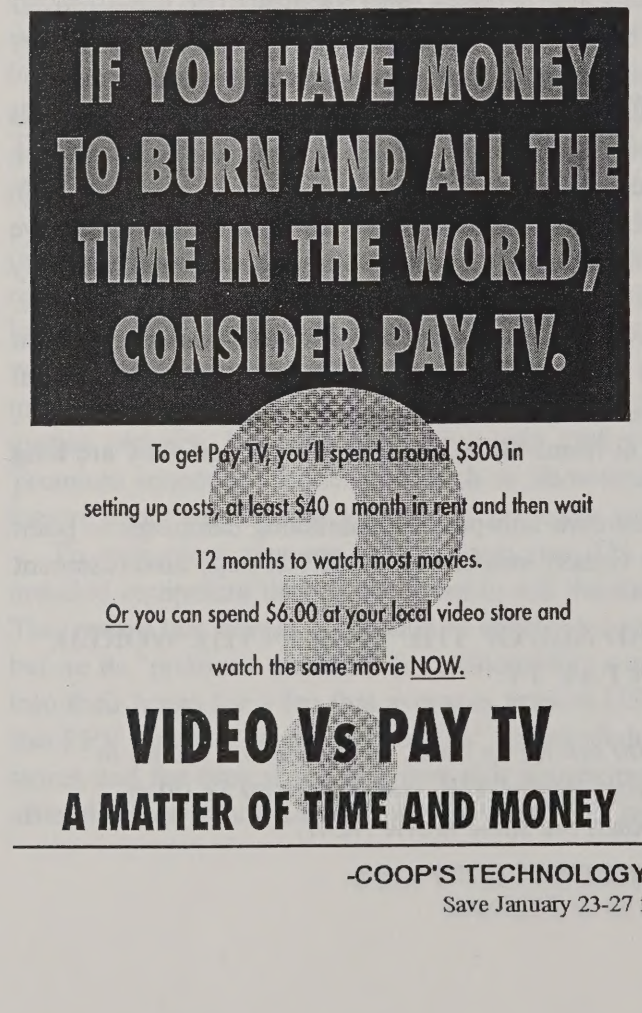
This advertisement attacks pay TV's weakness with a vengeance and truthfulness was apparently not a consideration for the individual who created the text. For example, it says:

✓ "*...with the government prohibiting advertising* (on pay TV) *for 5 years, your subscription of around $50 per month is Pay TV's only income.*"

In fact, advertising is prohibited only through July 1997. Additionally, pay TV programmers earn revenue by reselling their in-house created programming to other pay TV companies world-wide. This is not an insignificant additional revenue stream.

✓ "*Pay TV travels through a decoder connected to your TV which usually has a dedicated scrambling device that prevents you from recording on your VCR.*"

The facts are not quite like this. While pay TV reception does require a decoder (actually a two piece unit: See CTD 9502, p4.), that decoder is designed to remove the scrambling portion of the (MDS or satellite) transmission only. Movies may be further encrypted by some (not all) movie distributors (see CTD 9309, p.17) to impede duplication of rental films by consumers. This encoding, called Macrovision, can also be used as a secondary form of encoding for pay TV movie distribution. However, at this time Macrovision encoding to impede unauthorised

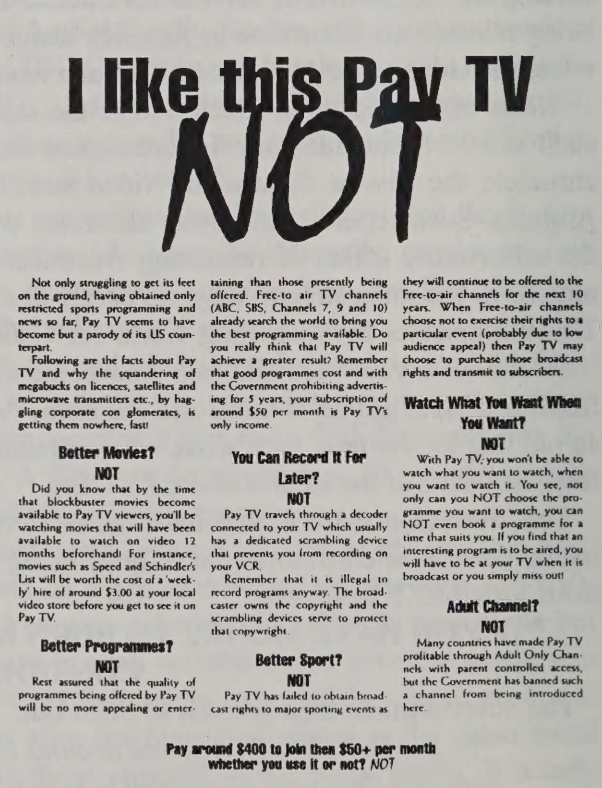


IF YOU HAVE MONEY TO BURN AND ALL THE TIME IN THE WORLD, CONSIDER PAY TV.

To get Pay TV, you'll spend around $300 in setting up costs, at least $40 a month in rent and then wait 12 months to watch most movies.

Or you can spend $6.00 at your local video store and watch the same movie NOW.

VIDEO Vs PAY TV
A MATTER OF TIME AND MONEY



I like this Pay TV NOT

Not only struggling to get its feet on the ground, having obtained only restricted sports programming and news so far, Pay TV seems to have become but a parody of its US counterpart.

Following are the facts about Pay TV and why the squandering of megabucks on licences, satellites and microwave transmitters etc., by haggling corporate con glomerates, is getting them nowhere, fast!

Better Movies?
NOT

Did you know that by the time that blockbuster movies become available to Pay TV viewers, you'll be watching movies that will have been available to watch on video 12 months beforehand! For instance, movies such as Speed and Schindler's List will be worth the cost of a 'weekly' hire of around $3.00 at your local video store before you get to see it on Pay TV.

Better Programmes?
NOT

Rest assured that the quality of programmes being offered by Pay TV will be no more appealing or entertaining than those presently being offered. Free-to air TV channels (ABC, SBS, Channels 7, 9 and 10) already search the world to bring you the best programming available. Do you really think that Pay TV will achieve a greater result? Remember that good programmes cost and with the Government prohibiting advertising for 5 years, your subscription of around $50 per month is Pay TV's only income.

You Can Record It For Later?
NOT

Pay TV travels through a decoder connected to your TV which usually has a dedicated scrambling device that prevents you from recording on your VCR.

Remember that it is illegal to record programs anyway. The broadcaster owns the copyright and the scrambling devices serve to protect that copywright.

Better Sport?
NOT

Pay TV has failed to obtain broadcast rights to major sporting events as they will continue to be offered to the Free-to-air channels for the next 10 years. When Free-to-air channels choose not to exercise their rights to a particular event (probably due to low audience appeal) then Pay TV may choose to purchase those broadcast rights and transmit to subscribers.

Watch What You Want When You Want?
NOT

With Pay TV; you won't be able to watch what you want to watch, when you want to watch it. You see, not only can you NOT choose the programme you want to watch, you can NOT even book a programme for a time that suits you. If you find that an interesting program is to be aired, you will have to be at your TV when it is broadcast or you simply miss out!

Adult Channel?
NOT

Many countries have made Pay TV profitable through Adult Only Channels with parent controlled access, but the Government has banned such a channel from being introduced here.

Pay around $400 to join then $50+ per month whether you use it or not? *NOT* duplication of Showtime (and Encore) movies is not apparent on the Galaxy services. If it is added at some future date, it is unlikely it would apply to all movie films transmitted just as only a fraction of the rental movies are Macrovision "protected." Thus the statement in the advertisement is misleading at best, and certainly inaccurate.

✓ "*Remember it is illegal to record programs anyway. The broadcaster owns the copyright and the scrambling devices serve to protect that copywright* (sic)."

Australia has more than 80% home penetration of VCRs; a factor that has help drive the current success of the film rental stores. It is not illegal to "*record programs*" and Galaxy's 9 present programming channels offer a rich lode for taping if the pay TV viewer wishes.

The Australian Video Retailers Association claims 3,000 outlets nationwide doing A$1B in business annually; 3.7% of the global annual video rental marketplace.

Meanwhile - The Technicians Fine Tune The System

As suggested in CTD April (p.11), "*Although Digicipher was the chosen system for Galaxy before News Corp came into the Galaxy scene on March 9th, if Murdoch has his way, the Digicipher system would be tossed out on its ear and replace with the NTL developed system which STARnet will be using on AsiaSat 2.*" That is precisely what happened just as CTD for April was going to Press.

It is now official: Galaxy will replace the existing Digicipher encoded MPEG format through Optus with the NTL developed MPEG 2 digital system. UK manufacturer Pace Electronics will supply a version of the fully addressable digiSTAR receivers to Galaxy direct, not through (existing and newly planned) Pace distributors in Australia. The receivers now planned for shipment into the Galaxy coverage region of Australia are virtually identical in appearance to those that STARnet will be utilising in Asia and the Pacific; but inside there are subtle differences.

✓ **All Murdoch operated** satellite delivered pay TV services share a common "*growth port*" built into each receiver. In the non-satellite world, this is called an RS-232 Port and within the receiver is a modem (modulator demodulator) to allow a standard telephone line to act as an 'order circuit' for each subscriber.

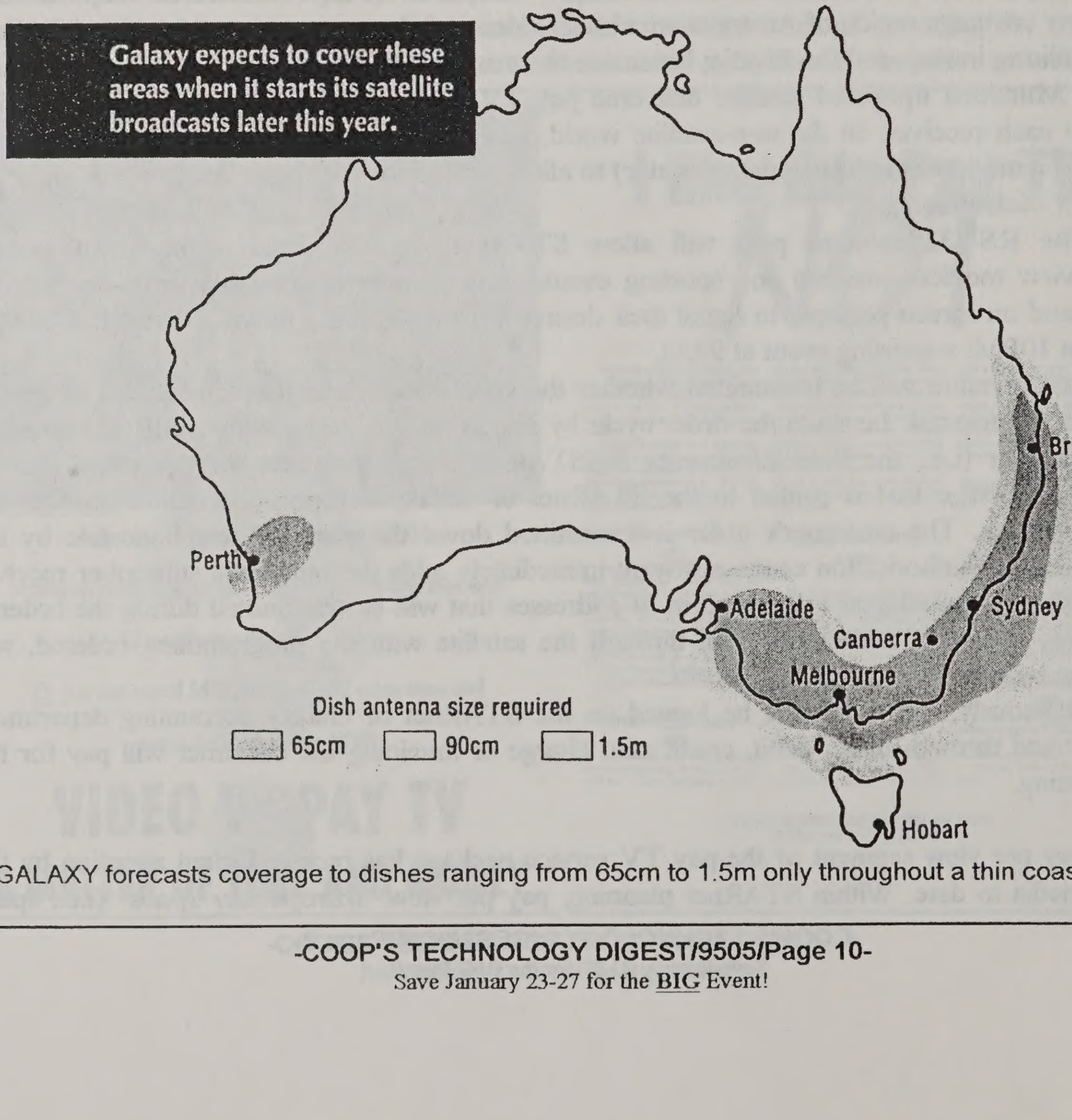
✓ **The RS-232 modem port** will allow STARnet and Galaxy to offer to subscribers pay-per-view movies, concerts and sporting events. Subscribers will use their infra red remote controls and on screen prompts to signal their desire to have a specific movie delivered at 8PM, a concert at 10PM, a sporting event at 9AM.

The event/feature will be transmitted whether the subscriber orders it or not. If the subscriber does wish the telecast, he starts the order cycle by indicating this desire with the IR control. The set-top decoder (i.e., the Pace Electronics digiSTAR receiver) translates the command into an automated message that is routed to the STARnet or Galaxy authorisation centre through the RS-232 modem. The customer's order is transmitted down the standard telephone line by the modem and the authorisation centre software immediately adds the individual subscriber receiver (IRD) authorisation address to the stream of addresses that will be transmitted during the ordered event. This electronic addressing, sent through the satellite with the programming ordered, will unlock the receiver's descrambling circuits.

Simultaneously, the order will be logged on the STARnet or Galaxy accounting department computer and through direct debit, credit card charge or invoicing the customer will pay for the programming.

This pay per view segment of the pay TV service package has received scant attention by the general media to date. Within STARnet planning, pay per view "*transponder space*" (i.e., space on the satellite dedicated to PPV programming events) will occupy more than 70% of all available spectrum. In other words, for each dedicated programme channel via satellite there will be 2.3 PPV *"programme channels."* The marketing philosophy at STARnet (and likely, Galaxy as well) is that the satellite service should provide a modest number of general service channels as a consumer incentive to purchase the basic equipment required, and then once the consumer is 'on line' and paying for the basic service, offer them considerably more additional service channels for premium pay per view charges.

In Australia's Galaxy-reach areas, the telephone industry is well established and RS-232 modem interconnection is possible at virtually all locations where a Galaxy DTH receiver will be sited. This is not the case in Asia where STARnet will reach homes still decades removed from direct telephone service. Therefore the STARnet version of the Pace Electronics receiver will also include a "*smartcard*" system. Here a customer pays in advance for a card that is pre-loaded with (local currency) "*credits.*" Like a Telecom NZ phone card, as the satellite viewer selects and watches a particular programme for which a PPV charge is made, the unused balance within the "*smartcard*" is reduced. This receiver was first demonstrated at European trade shows in March and is scheduled for first shipment into the STARnet distributor network in June. Additionally, the STARnet version of the receiver will also contain multiple language audio channels and on screen text channels for subtitling in the wide variety of languages which are required for Asia. This will


Galaxy expects to cover these areas when it starts its satellite broadcasts later this year.
Brisbane
Perth
Adelaide
Sydney
Canberra
Melbourne
Hobart
Dish antenna size required
65cm
90cm
1.5m

GALAXY forecasts coverage to dishes ranging from 65cm to 1.5m only throughout a thin coastal area

How RS-232 Modems Will Alter Galaxy DTH Installations

Australian regulations require that any device equipped with a (RS-232) modem be "*installed and connected to the* (national) *telephone system only by an individual*" holding an Austel Licence. Exams for this licence require 100% correct answers on a portion dealing with regulations, and 70% for pass on a portion dealing with installation techniques. A fee of A$200 is charged for the exam, A$100 every two years for licence renewal. One and two day training seminars are conducted to prepare individuals for the exam (a fee is charged) and the regulations testing segment questions are drawn from a massive 800 page regulatory reservoir which each Austel Licence holder is expected to have committed to memory. Most TV aerial installers and TV service technicians are reported to not hold this Licence although it will be mandatory for anyone who in the future becomes involved in installation of the digiSTAR IRD unit for Galaxy.

not appear in the Galaxy version and the cost of the Australian unit will be lower than the Asian version as a consequence.

Coverage for the Galaxy service utilising the two Optus B1 (160.0E) horizontally polarised transponders (10 and 11) is predicted to be available only within the regions shown in the map here (bottom, page 10). Optus computer projections originally believed the signal level on the ground would be 52 dBw at the peak of this "*High Performance*" footprint but drop rapidly to 47 dBw through (for example) the northern edges of Tasmania (see map). It is the 47 dBw beam edge point which defines the extremities of predicted coverage utilising dishes 1.5m in diameter. Optus B1 has seven separate transmitting antennas on board and each antenna creates a unique coverage pattern. Of the 15 transponders on B1 (all 54 MHz in bandwidth), 7 are capable of "*High Performance*" coverage patterns (transponders 9, 10, 11, 12, 13, 14 and 15; all horizontally polarised). B1 also has a coverage beam (within its 7 transmit antennas) that includes New Zealand as well as some portion of Australia. However, only the vertically polarised transponders (1V through 8V) have a (planned) New Zealand capability; none are presently used by Galaxy.

Based upon computer predictions, coverage of New Zealand on the existing two Galaxy transponders was considered a technical impossibility using antennas smaller than 5m in diameter. Obviously 5m size antennas at NZ$18,000 and up would at most have limited appeal only in specialised applications such as cable television headends and larger hotels. As early as late January, before Galaxy began programming but while testing on transponders 9 and 10H was underway, this information was found to be incorrect. Subsequent tests encouraged by the trade association SPACE Pacific and SatFACTS Monthly have now taught us that reception of Galaxy service on the two existing transponders is remarkably better than the original Optus and Hughes (Optus satellite manufacturer) computer predictions. The Optus New Zealand footprint, based upon these tests, appears to vary from a low of 43 dBw at the extreme northern tip of North Island to a peak value of near 48 dBw through the southern ends of North Island and the northern side of South Island, back to a value near 46 dBw at the southern tip of South Island. This says that antennas in the 1.5m class will provide worthwhile reception from Galaxy to individual receiving sites between approximately Auckland and Greymouth while dishes in the 2 to 2.8m range could suffice at the extremities of New Zealand.

None of this has, to date, been acknowledged by engineering staffs at either Optus or Galaxy.

The earliest start date for Galaxy DTH service now predicted is the fourth quarter of 1995. The service has announced a charge of A$300 for installation (for a dish system costing Galaxy around A$1100 plus installation costs) and A$49.95 per month (the same as the present MDS charges).

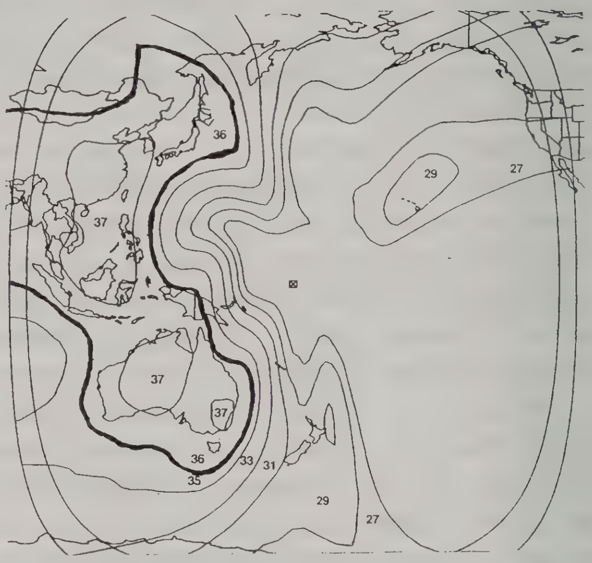
TECHNOLOGY BYTES

...BITS and BYTES you may have missed in the rush to make a buck... ...

May 31, 1995 / ISSUE 95-5-18

SATELLITE TV and RADIO

PanAmSat is planning to give away more than 1,000 three metre size TVRO (television - receive only) dish systems to potential customer / users of programming distributed on PAS-2 and yet to launch PAS-4 satellites. To qualify for a "free dish system" the user must: **(a)** Install the dish within a 36 dBw (or higher) signal service contour, **(b)** agree to receive and distribute to others one or more PAS-2 programming services (such as CMT or MTV), **(c)** agree not to receive and redistribute any programming for which the dish recipient does not have authorisation, and, **(d)** agree that the dish shall be pointed only at PAS-2 (4) and not used for reception from any other satellite(s). The Eagle brand dishes are solid metal (not mesh) sectionalised dishes designed for C and Ku band operation. With each dish (plus mount) the giftee also receives a Chaparral (Bullseye II) C and Ku bands dual polarity feed and four low phase noise LNBs (2 each C and Ku). The approximate value of each such terminal is in the region of NZ$2,600 with maximum pricing discounts applied. PanAmSat believes this technique of increasing use of its own customer's services is an appropriate method of jump-starting the distribution of satellite delivered programming. Funds for this exercise are coming from a general promotional budget that had been established by PanAmSat for the launch of PAS-2 and PAS-4. Although New Zealand is outside of the 36 dBw contour (see map to right), there is sufficient latitude in the free dish policy to allow some distribution (here). John Bowen, Managing Director of 'The Meeting Group,' for example, has arranged for three dish packages which are being installed at hotels in Auckland, Wellington and Christchurch. The normal policy is for the free dishes to only go to cable TV systems already established and operational. The original concept included up to 1,000 dishes to be distributed for PAS-2 and 4 but with the increased interest in Indian beam coverage for PAS-4 PanAmSat believes the ultimate "dish give-away" universe could total as many as 2,000 systems. For details contact Cynthia Dickins (PanAmSat: Tel. 61-2--251-8833, Fax 61-2-251-8382) or Richard Fleck of Global Vision (Sydney: Tel. 61-2-977-0188, Fax 61-2-977-0934).



FREE DISH TERRITORY: Inside 36 dBw contour

Optus is now flying second generation satellite B3 in tandem with first generation satellite A3 at 155.9E. B3 was launched last August and has been in 'storage orbit' at 151.7E since that time. As recently as 90 days ago, Optus was uncertain when B3 would be brought into the status of operational satellite and internal memorandums were suggesting "early 1996." That has now changed as sources at Optus advise, *"We are being driven by the pay television forces, in particular Galaxy, which appears to want service moved from the present B1 satellite* (160.0E) *to B3 by as early as September 1st."* If this satellite move does happen, Optus warns, *"there will be massive reshuffling of traffic* (user) *loading on both B1 and B3. There is particular interest in the high power beams that are spotted on the populous south-eastern coastal areas of Australia."* There has also been contact between Optus and a number of cable television system planners with some reach to New Zealand included in their business plans.

A cap on additional satellite delivered pay television licences will keep new programmers from reaching directly into Australia (through Galaxy or others) until at least July 1997. This raises the possibility that programmers acquiring satellite transponder space for service to New Zealand might sneak into Australia by 'pretending' they are a NZ service rather than an Australian service. Optus sources say that a number of firms including Telecom NZ have come to them with this scenario in mind. A NZ based client of Optus would have two possibilities for transponder space: **(a)** take a transponder which was initially designed for NZ coverage, or, **(b)** take a transponder identical to that now being used by Galaxy on Optus B1 which also reaches NZ (see page 9, this issue) as 'overflow' from the populous south-eastern coastal regions of Australia. Electing a NZ designed beam would produce high quality reception in New Zealand with dishes in the 65cm range while the Australian coverage area would require a larger dish. Election of the Galaxy-class transponder would reverse the scenario; smaller dishes in Australia, larger dishes in New Zealand. An Optus source told CTD, *"It is a dollars and cents decision; all of New Zealand combined has the population of Melbourne so you decide which beam reaches the greatest number of people with the strongest possible* (smaller dish required) *signal."*

MTV (Music Television) **Mandarin** language service which began operation late in April (PAS-2, TR3V) will stay in free to air (FTA) format until sometime in August and then encrypt using NTSC B-MAC format. The service is one of two services launched (MTV Asia, primarily in English, also launched on May 5 from Palapa B2P which is not viewable in New Zealand nor any but far northern Australia) from MTV studios in Singapore. Although the Mandarin service is ostensibly for the Chinese market, in fact more than half of the music videos shown are in English and feature well known American and European artists. Because the pure English version is not presently available in the (south) Pacific, MTV has announced it will accept orders from hotels, motels, and cable plus SMATV systems for the Mandarin language service at approximately US$0.30 per outlet (room, apartment, cable home) per month. DTH policy has not yet been set. Satellite Management International has been appointed as 'agency' for the MTV service throughout this region; details from Michael Fleck (Sydney tel. 61-2-977-0188; Fax 61-2-977-0934).

Turner International's TNT / Cartoon Channel, originally scheduled for PAS-2 launch in mid-April, has reset the third week in June as the target date. On May 25, Turner International Australia (Angela West; Tel. 61-2-957-5255, Fax 61-2-957-5161) began notifying cable and SMATV firms throughout the Pacific of the details of the new service. It will be located on PAS-2 transponder 15V with a centre frequency of 4152 MHz (thus, it will not use the present Turner International transponder 10H where CNN currently is in 1/2 transponder format), and will be

IN-ORBIT SYNOPSIS: (May 29, 1995)

Intelsat I180: Following CNN withdrawal (31 March), no major changes have occurred on this satellite. The next big event will be replacement by a new VII-series satellite during the first quarter of 1996, ending the need for inclined orbit tracking.

Intelsat 177 & 174E: Although both are new (stationary) VII-series satellites, only the top highest frequency transponders (receiver IFs of 962-984 MHz) carry video; primarily occasional feeds for Korean, French, US, Japan and Australian sources. UIH, part owner of Kiwi Cable, continues "interested" in a western hemispheric C-band transponder for possible distribution of MPEG format programme channels to cable and DTH subscribers.

PanAmSat PAS-2 (169E): Currently in S/A MPEG 1.5: CTN and CBS (TR1V); CTN, CCTV and ABN (TR2H); Encore, Showtime, Prime Sports (TR9V). In (GI) Digicipher 1: The Filipino Channel (TR14H). In NTSC B-MAC: ESPN (TR5V), TNT / Cartoons scheduled for June start (TR15V). In PAL B-MAC: Discovery (TR4H). In analogue FTA (typically interim): MTV (TR3V, scheduled for NTSC B-MAC August), NHK (TR12H), CNN (TR10H) and ANBC (TR13V, scheduled for Philips MPEG).

Rimsat G2 (142.2E): ATN (Asian Television Network) continues 24 hours on TR R6 in Hindi, English; Australian supported (channel 9) EMTV (PNG) continues 14+ hours (English) on TR R10.

Rimsat G1 (130.0E): RAJ-TV continues 6+ hours daily (18 Sundays) on TR R6; has tested second programming in same (1/2) transponder, scheduled to go to 24 hours by June 15.

SCHEDULED UPCOMING LAUNCHES

128E: Japanese JSAT 3 with C + Ku band footprints for New Zealand, South Pacific (July-August)
113E: Palapa C1 with expanded C-band downlink footprints to NZ, S. Pacific 3,400-4,200 MHz (November)
100.5E: AsiaSat 2 with expanded C-band downlink footprints to NZ, S. Pacific 3,620-4,200 MHz (Sept-January)
140.2E: Express class to replace older Gorizont (18) 1st quarter 1996

in 1/2 transponder format with a maximum eirp (on ground signal level) of 33 dBw (4 dB back off from full power; not dissimilar to the current CNN signal on 10H; or around 30 dBw into most of New Zealand). The encryption will be B-MAC NTSC although the service may run FTA for a brief period when it is first introduced. Turner Sydney will be the source of the B-MAC units, Scientific Atlanta 9708 IRD, and the price is US$1300 per receiver including shipping, taxes and duty (possibly only into Australia). This is to be a multiple language service as follows: (Mono) Audio 1 Left is English, 1 Right is Mandarin; Audio 2 Left is Thai while Audio 2 Right is reserved for future use in Japanese. As reported in CTD for April 28, the cable TV and SMATV rates are US$1 per month, and the DTH rate is US$50 per year. Unannounced is how, or when, Turner may utilise the second half of transponder 15V.

The Family Channel, always rated in the 'Top 5' for viewership in the US cable TV marketplace, plans a late 1995 'start' in the Pacific using transponder space on PAS-2. The Family Channel began as a religious-right service (as a satellite link for [US.] television station WYAH, then modified as Christian Broadcasting Network) built around charismatic preacher Pat Robertson in 1978, but has evolved into a middle of the road no-violence, no-sex general service which creates its own feature films and programming in addition to popular off (US) network syndicated shows. Details in SatFACTS #10 (June 15).

The Discovery Channel and ESPN, both transmitted on PAS-2 in forms of B-MAC encryption, have separately made it known they will not, at this time, accept orders for DTH (direct to home) subscriptions in the Pacific region via their PAS-2 feeds. Both Discovery and ESPN are under contract by New Zealand's Sky Network which had until early May shown a reluctant agreement to process orders for IRD (integrated receiver decoders) and the subscription orders for DTH. The Discovery Channel is investigating utilising an "agent" (subscription representation firm to handle marketing and collections) for areas outside of Australia (to include New Zealand), but ESPN has decided that its programmes will for now only be available to commercial installations and then only outside of New Zealand and Australia.

AsiaSat 2 launch date, officially from the satellite owner, is still planned for *"the third quarter of 1995"* (i.e., July 01 to 30 September). The precise launch date, believed by virtually everyone else to be in November -December-January is complicated by the launch failure of ApStar 2 from the China Great Wall Industry Corporation Chinese facility in January (CTD February 23, p.15; April 28, p.14). Fault for the January failure is still not officially assessed and until the cause of the failure is documented and proof of corrections to prevent a repeat in place, the satellite launch insurance industry will not insure the AsiaSat 2 launch. Recently announced AS2 users include APTV (Associated Press Television) for a 9 MHz chunk of a 36 MHz C-band transponder (for one or more MPEG 2 programme channels), and Deutsche Welle which has taken a full 36 MHz C-band transponder. The German DW service plans two or more MPEG 2 formatted simultaneous service channels in a variety of languages: English, German, Spanish as well as several Asian languages. The DW marketing will be to SMATV, CATV and terrestrial broadcast facilities and the services will be FTA. New Zealand will be included in the DW coverage region. A third new AsiaSat 2 customer is World Television News which has also leased a 9 MHz piece of a 36 MHz transponder.

STARnet's new AsiaSat 2 digiSTAR service will not be available to most (if any) Australians. That's the word from STARnet Hong Kong personnel who say that because News Corp has bought into the Australis / Galaxy service, Australian coverage by STARnet will be "ignored." If Australians wish access to Pay TV, they will be forced to sign up for the Galaxy service. This statement is not considered friendly by Australians living away from the narrow coastal strip areas that Galaxy will eventually serve with DTH service (see map on page 10 of this issue). The AsiaSat 2 signal level throughout virtually all of Australia will be in the 34 dBw+ region, suitable for home DTH antennas under 2m in size. Viewers in central and northern Australia, anticipating the availability of the STARnet service, are organising to request a reconsideration of the STARnet decision. Under Australian Broadcasting Authority (ABA) regulations, pay TV services originating outside of Australia will not be allowed to serve Australian viewers until at least July 1997. However, STARnet's digiSTAR service will include no fewer than six non-pay TV free to air programme channels that would not violate the ABA rule. STARnet says that they do not plan to "turn on" digiSTAR receivers with Australian addresses, even for these FTA programme channels. To the contrary, New Zealand is not presently considered to be a part of the Galaxy market and for now STARnet will consider cable, SMATV and DTH applications here (Raymond Ching, STARnet, Fax 852-524-4093).

An Australian pornographic media firm has approached PanAmSat concerning leasing of an Australia / New Zealand Ku band transponder for distribution of encrypted porno-flicks 4 hours per day along with a less controversial shopping channel 20 hours per day. The firm claims to have a mailing list of 250,000 individuals throughout the Pacific. Australian regulations prohibit the importation of any form of offshore created "pay TV" prior to July 1997; the planners believe they could uplink from an (unnamed) Pacific Island and sell special IRD units which arrive at their destination pre-authorised for the encrypted service, through a "private membership club" and beat the ABA regulations. Others tuning in the service would find only an encrypted programme during the 12 midnight to 4AM (Australian eastern) time. The porno planners say their flicks would "go no further" than many of those now distributed through Australian video shops. Ku band service into Australia from PanAmSat requires dishes in the 65cm region.

Hong Kong's most prominent broadcaster TVB (International Limited) has signed an agreement to lease a 54 MHz bandwidth Ku band China (spot beam) transponder on PAS-2. The company plans to commence broadcasting to Taiwan and the Chinese mainland at some unspecified date late in the year. The spotbeam high power signal will reach dishes as small as 50cm in diameter. While this is the first signed contract for use of the China spotbeam on PAS-2, CTD understands at least two Taiwanese telecasters are also planning similar programming launches using the same spotbeam service. TVB began delivering programming to the SkyCable system in Manila May 5th fed from their Apstar 1 transponder.

Iranian police claim to have seized 500 privately owned satellite dishes in the city of Tehran after their owners refused to turn in the dishes following announcement of a government ban on private dish ownership. Iran is attempting to limit the inflow of "western culture" to the country and their police say more than 26,000 privately owned dishes were taken down and voluntarily turned over to the police. A Reuters wire service story late in April estimated that Tehran has approximately 250,000 satellite dishes or one for every ten people.

Rwanda banned use of its two satellite uplink stations for a period in early May to prevent information concerning infectious epidemics from leaving country.

Saudi Arabia is planning a world-wide satellite television service to spread Islamic principles.

APNA Television ("Our TV"), scheduled for programming launch into the Pacific Ocean region in May, has apparently aborted. The London based service had arranged satellite transponder space on two Russian satellites (14W and 103E) and also claimed they would appear on the Russian satellite at 140E as well. Some testing was seen at 14W and 103E late in April and then the service disappeared. It was to be in five regional dialects for India and feature a broad variety of programming intended for distribution within India and the Asian continent via cable television systems. Why the service failed to appear as announced has not been clarified.

RAJ-TV's powerful transponder (R6) on Rimsat G1 (130E) was seen testing with two separate, unrelated programmes over the weekend of May 20th. The Indian Tamil service has been exploring methods of increasing its revenue stream and was planning to announce a greatly expanded service (from 6 to 24 hours weekdays) in mid-June. The Rimsat transponder space is sufficient for a pair of simultaneously transmitted programmes in analogue format and this was the May 20th observation. In 1/2 transponder format the total power available within each half is less than half the total available to a single programme service because of a factor known as "backoff,' a requirement to prevent 'cross talk' between the two simultaneous programmes.

Indian satellite programme operator ATN is charging that Rupert Murdoch's STARnet service Zee Cinema is distributing films to the Indian Hindi film market in violation of ATN's exclusive right to approximately 1,000 Hindi language films. Zee Cinema began operations from AsiaSat 1 satellite April 9th. Dhirubhai Shah, owner of the film rights, and ATN, licensee of the film rights, are filing suit in both Hong Kong and Indian courts seeking to stop Zee Cinema's use of the movies which ATN claims are exclusively theirs to use for cable distribution within India. Sources in India say that Zee Cinema is attempting to skirt around the ATN "cable exclusive" by claiming that their distribution is to be limited to "satellite." Within India, there are thousands of neighbourhood (50-500 subscriber) cable television systems which distribute a companion Zee TV service from satellite to cable connected homes. It is the fear of ATN that these same neighbourhood cable systems will distribute Zee Cinema in the same manner. Zee spokesman say the Zee Cinema service is only accessed through a decoder and they believe that the cable operators will not violate their decoder agreement by reproducing the received signals through their cable systems.

Russia's Express Class satellites, their latest design and boasting more transponders plus in-orbit stability (thus eliminating normal tracking required) have run into a snag. The electronics payload, or transponder equipment, in the new design is failing on the only Express launched to date (to 14W) with frightening regularity. Two C band (out of 12) and 1 Ku band (out of 2) transponder systems have either quit or become erratic in operation. This directly affects Intelsat, which has committed to lease as many as six of the new satellites for its international circuits use, Rimsat which plans four of the new satellites, and GE Americom which is waiting for in-space delivery of their first which they have already sublet to a group of Indian satellite telecasters. There is no formal word when the launching of Express satellites will resume but European sources are suggesting very late this year or early in 1996; certainly not until the problem has been identified and a fix found. For New Zealand, a pair of Express Class satellites are scheduled for locations between 140E and 180E and at least one of these was originally to have been placed into orbit this calendar year.

Rupert Murdoch's News Corp has formed a US$2B alliance with MCI Communications Corporation. How News Corp intends to use the funds was not immediately announced although both firms did pledge US$200m towards establishing a world-wide joint venture to create and distribute electronic information, entertainment and educational information. Murdoch's AsiaSat 2 STARnet service has been suggesting that in addition to normal television programme distribution through their next generation digiSTAR service the consumer users would have access to a range of audio-only 'radio type' services (up to 30 has been mentioned) and a number of on screen text services.

Standard & Poors Ratings Group has revised upward PanAmSat senior redeemable stock and senior secured debt citing the positive acceptance of the firm's PAS-2 satellite services and funding for its PAS-4, PAS-5 and PAS-6 satellites.

PanAmSat PAS-4 has completed system check out and is scheduled to be shipped to the Ariane launch site at Kourou, French Guyana on June 14. Ariane Space presently schedules a launch of the satellite for mid-August. The Hughes HS 601 satellite has 16 C-band and 24 Ku-band transponders on board.

Taking a clue, perhaps, from PanAmSat's PAS-2 "international programme neighbourhood" approach, North American Galaxy IV satellite has decided to market Ku transponders to ethnic programmers seeking to reach the US marketplace. Long term leases have been signed with The Filipino Channel, Chinese TV Network, Jade Channel and a Russian language channel. The primary audience will be cable TV systems located in ethnic markets in US and individual families.

South African firms are predicting that the launch of PAS-4 (July 1995 to 88.5E) and its 'turn-on' for spot beam Ku service into South Africa will fuel sales of 100,000 DTH dish systems in the first year, rising to 300,000 in year 3 and 750,000 in year five. The South African Broadcasting Corporation, MultiChoice, Electronic Media Network, Viacom International (for MTV), M-Net and Turner are amongst those programmers who have signed for space on the satellite. All SABC radio and television channels will be included in the distribution package; all signals are likely to be MPEG digital from the outset. A national media programme underwritten by the programmers is scheduled to spend 2.5 million rand over sixty days to educate consumers about the advantages of satellite television. South Africa's population is approximately 30 million.

Patent fight over who owns rights to the television encryption system used by General Instrument (GI) for both analogue Videocipher and digital Digicipher systems has landed in a San Francisco court. GI is being sued by Comsat, the US corporation that represents American interests in the Intelsat system world-wide. The technology for the encryption seems to have originated at Comsat and in turn was licensed to Scientific Atlanta. And S/A in turn appears to have licensed GI for "world-wide use" of the system. The Comsat patent history originates in 1980, was updated with a newer patent in 1990. Basically, it involves the creation of conditional access systems for authorising individual set-top converters or satellite receivers to receive particular broadcasts, based upon applying logarithms to a series of numerical sequences. Each set-top of receiver unit is down loaded "keys" which are retained for one calendar month before being replaced with new keys. The insertion of the keys into the numerical sequence completes the decoding. No specific damages are yet being claimed.

DIGITAL OLYMPICS

Although the Americans had hoped the 1996 Atlanta Olympics would be available in US in at least some locations in HDTV using MPEG transmission format, that now appears to be less and less likely except for technical demonstrations of feasibility (first digital TV sets are expected in the market in April 1997). And that will make the 2000 Sydney Olympics the first full scale roll out for totally digital coverage. As an interim step, NBC which has the US. programme rights to Atlanta, plans to do most of the editing, post-production, and video storage of events not in Atlanta proper but rather back in New York City. Using both satellites and fibre optic trunking, as many as 400 separate camera shots covering up to 25 separate, simultaneous events, will be transmitted from Atlanta back to New York City where the full production facilities of NBC will turn the raw video (and accompanying audio) into outward bound television programming. NBC says they will trim as much as US$20m from their operating budget by "transporting pictures rather than people" and leaving significant numbers of personnel and their production equipment 'home' in New York. The 1996 Olympics will include full-stereo audio on all events, super-slow-motion video and more point-of-view cameras (such as placing them inside the mouth of the soccer goals). The event will have more than 3,000 sporting contests spread over 16 days.

DirecTV (DSS) in North America gains its third satellite in June with Ariane launch of DBS-3; viewers will gain another 30 channels of programming, making total 180 (!) to homes using digital direct service on 50cm dish. Competitor EchoStar is using Chinese Long March rocket for launch which had originally been scheduled for August but which now appears off until October-November at earliest. The EchoStar satellite was originally scheduled to fly after AsiaSat 2 but there is now the possibility the launch sequences will be reversed. Also in the US market, Sony is now selling DSS receivers under an agreement it has with originator Thomson that allowed Sony into the marketplace after the 1,000,000th DSS receiver unit had been shipped by Thomson. Unusual feature of Sony 50cm aluminium dishes: On LNB at dish is LED that is fed control signal through coaxial cable from DSS IRD typically located inside of house; LED glows brightly when satellite dish is peaked on satellite speeding installation by anyone who can see LED glowing.

Loral has proposed a pair of geo-stationary Ka band (28 GHz) satellites at 110W to provide broadband high data rate transmissions over North America with a 1,000 MHz downlink bandwidth (present C-band satellites have a 500 MHz bandwidth). They call the system "Cyberstar."

Japan's Ministry of Posts & Telecommunications is testing the Japan Satellite Systems digital broadcast service which is now scheduled for April 1996 launch. The Japanese have been very quiet concerning the transition from analogue to digital transmission systems and this represents the first plan to actually implement digital as a transmission medium.

Rimsat G1 transponder TR R8 user Manila broadcaster ABC-5, in English, has become first Rimsat user to switch to (S/A) digital compression. Service is not viewable in New Zealand but is seen in northern Australia. Rimsat telecaster SUN TV has released its lease on G1 TR R10 on G1 and this hemi beam transponder is now available at US$1.2m per year with uplink by Rimsat from Subic Bay (Tim Brewer, Fax 63-47-252-3710)..

DIGITAL TV and RADIO

High definition digital television specs for Digital Videocassette system have been approved by 50 companies which had earlier approved basic DVC system standards leading to consumer video products in this area by next January. To meet the needs of early and later consumers, the DVC system will have several different (compatible) formats. The first versions will accept analogue NTSC, PAL or MUSE (off-air, off-satellite, or cassette) signals and A to D convert them to digital signals for direct recording as digital information. On playback, the digital signal will be D to A converted for play on analogue TV sets. The second version will accept either analogue signals or the bit stream data from digital TV transmissions and record directly in digital format, playing back in either digital or analogue as the user requires. The third generation will accept digital in, record in digital, and playback in digital going directly into the digital TV receiver (or monitor). The tape standard established is a 1/4" metal evaporated tape with a DAT sized (tiny) cartridge for recording and playing back 60 minutes in standard definition, 30 in high definition; and, a 4-1/2 hour version that will be slightly larger than a standard audio cassette.

Scientific Atlanta is calling its fully MPEG 2 (full motion) system PowerVu. The DVB compliant system will function with the important European standards adopted for MPEG 2 transmission via satellite there, ending the brief but unpleasant period when S/A digital video was only functional with S/A format receivers. The DVB compliancy ensures NTSC or PAL interchangeability, switchable 16:9 and 4:3 aspect ratios, automatic FDM or TDM configuration (accommodating multiple and single programme channels per MPEG carrier), and smart card impulse pay per view capabilities. S/A expects the hardware for PowerVu to be in routine production by September of this year (contact Peggy Ballard, Scientific Atlanta, Fax 404-903-6246).

US HDTV system is adopting "headers" approach to MPEG data stream which will allow all transmissions to be backwards compatible. This means future addition of 3-D imaging, for example, will be "header addressed" so that receivers not equipped with 3-D capability will simply ignore the 3-D data packets. In this way the MPEG system will be "finitely dividable" in terms of number of actual programmes slotted into standard (NTSC) 6 MHz bandwidth. And this will allow broadcasters who hold licences for 6 MHz "channels" to load their 6 MHz of spectrum with any combination of data streams that do not exceed the 6 MHz bandwidth. Some of the options to be available include mixtures of text (data), low-motion change video programmes (game shows, movies), high motion speed programmes (sports), up to 75 CD-quality stereo radio pairs, or, an entire 100 page newspaper in 1.7 seconds.

CBS radio, Gannett Broadcasting and Group W Radio, major AM radio broadcast station owners in US, have signed contract with National Semiconductor to develop and build decoder chips for in-band stereo format digital receivers. FCC has not yet decided which of two competitive AM digital formats to authorise and move by broadcasters is step towards increasing pressure on agency to do so.

TELECOM LOSES RATES CASE: Threatens to 'Pull Out' of Auckland !

A precedent setting decision by the High Court (Auckland) is not good news for Telecom, cable TV, competitive telephone carriers such as Clear or anyone else using air "space" or underground "space" to run wires or install equipment. The High Court determined (May 25) that Telecom equipment installed under its Network Operator (status) confers an obligation for the purposes of the 1988 Ratings Powers Act. In short, Telecom must pay "rates" on the "space" it occupies both in the air and in the ground.

Telecom argued Network Operator (status) did not result in an "interest" in the land (or airspace) occupied. Justice Robert Fisher found to the contrary: "*The right of occupation is even exclusive, in the sense that the sheer physical presence of the utilities precludes the use of the same space by other persons including the principal owner of the land.*"

The (Auckland) City Valuer first attempted to charge Telecom by including space occupied by Telecom telephone booths and Telecom wires and equipment in July 1991. Separately, and not in contention, is the City Valuer's rating of the utility assets.

Judge Fisher's ruling notes that as soon as Telecom (and presumably any other Network Operator), "*exercises its powers, it gains the broadly permanent and exclusive right to use and occupation of that space occupied by its lines, ducting and booths.*" In essence, only one physical object can occupy a space at a time and Telecom, by being there (first) under the Network Operator powers, precludes anyone else from ever being in the same space.

There is some precedent in New Zealand law for the ruling: Underground natural gas lines have been similarly "rated" since 1919 and in the Hutt Valley high voltage power lines were first 'rated' in 1949.

In the case of Telecom, the actual "space" occupied may seem minuscule (such as 25 to 40mm for the actual ducting) but in a technical sense the "space" occupied is considerably greater. Within the utility safety regulations there are minimum distances prescribed between power wires and telecommunication wires and minimum safety distances prescribed for any inadvertent contact by the public to any of these lines. The ruling is expected to apply to overhead and buried power lines as well. Safety regulations require 600mm as a minimum between electrical wires and telecommunication wires and as much as 5.5 metres between many classes of (electrical) wires and the ground level. Unanswered during the Telecom matter decided by Judge Fisher is how this "safety space" might be allocated for rating purposes. If the occupation of the "space" constitutes "*permanent and exclusive right to the space*" as Judge Fisher determined, might not the "safety clearance space" also become a part of the rate base?

The Judge further found that the utility benefited from "*services provided by the local authority - such as roadings and drainage - and in that way the rates could be seen as quid pro quo for the ratepayer's capital gain.*"

We have not heard the last of this issue.

World-wide Digital Audio-Visual Council (DAVIC) is scheduled to hear and adopt QAM modulation scheme developed by General Instrument as world standard for modulating (transmitting) digital television in June. QAM is used by virtually all cable TV programme distributors and systems, direct satellite system DSS/DBS and Primestar in US. Non-compatible VSB modulation technique, adopted by US for over the air digital HDTV, is a bit of a problem to future digital TV set manufacturers. Engineers say a digital TV set could be manufactured at an additional manufacturer cost of US$2 to receive either QAM or VSB schemes but there is serious doubt that TV receiver manufacturers will do this voluntarily. American FCC is considering rule making that would force them to do so for receivers to be sold in US.

CONSUMER ELECTRONICS

Japanese TV set makers believe the introduction of DSS (digital satellite TV) into the US. has been "*the best thing to happen to big screen TV in the history of the product.*" Large screen direct view TV sets (30/35") and projection sets (40/60") have taken off as major consumer items in past six months and Japanese manufacturers say primary reason is the "*digital quality of DSS television which now makes practical large screen displays without annoying noise artefacts.*" In an industry where 50,000 large screen units sold in a year was cause for celebration only three years ago, Toshiba alone plans 530,000 this year.

Toshiba and Pioneer plan to be early entrants into DVD player field with models in showrooms by next May. Sample production units are expected to be shown at trade shows as early as June with manufacturing capabilities of up to 100,000 units per month projected by next fall. Toshiba will manufacture units for own branding as well as for Thomson under RCA label in US.

RCA confirms its first stage order with Toshiba and says it plans to launch DVD industry in US "with same purpose and dedication as we have done with the Digital Satellite System." RCA plans "*largest product-specific promotion push in our history*" and pledges to spend US$30m in advertising and promoting the new DVD technology to the American consumer marketplace at a retail list price of US$499 per unit. RCA parent says that during the 1995-1997 period, the entire basis for the company will shift from the present analogue to the digital system because "*that is where we believe the future will be.*"

Philips Ghostbuster technology, designed to eliminate on screen secondary (ghost) images created by multi-path effects in hilly and mountainous terrain such as New Zealand, will appear in US at (US)$150 for set-top boxes by August. Philips is also currently marketing 2 new direct-view TV receivers with the Ghostbuster circuitry built into the chassis there. Two IC manufacturers, Zoran (Santa Clara, Ca.) and Goldtron Group (Singapore) have announced a joint venture to manufacture the special IC chips required for the Philips GCR system. Tests of GCR have been conducted in New Zealand by BCL but to date no implementation date has been announced by any New Zealand telecaster. The cost for the telecaster is very modest: under $10,000 to equip transmissions with the special reference signal that triggers the receiver GCR circuits.

Hyper-dynamic CCD imaging device developed by Matsushita may be the television image pickup device of the (near) future. The tiny sensor screen has the ability to detect 10,000 different levels of light intensity versus only 500 for the best quality present technology CCD imagers. Matsushita says this means images of great clarity even when there are sharp contrasts very close together in the same 'shot'. Other advantages: They forecast a complete slide-into-your pocket camcorder with performance significantly better than the best three panel CCD imaging professional cameras now available.

FlexiZone feature in latest Canon camcorders allow user to dial-up specific portion of image in viewfinder. This causes camera electronics to always keep that portion of image in focus as long as it appears anyplace within viewed image, and automatically adjusts the focus, brightness and sharpness of the particular object. This is first such feature in consumer camcorder units; prices start at NZ$1155 and go up.

CABLE / FIBRE / MDS PAY TV

Galaxy sales success in Australia remains a mystery as the firm holds subscriber numbers close to vest. The original A$299 install fee was first dropped to A$99 in Perth in mid-April, with Brisbane, Sydney and Melbourne following. More recently a report in the Sydney Morning Herald noted the install price has dropped as low as A$45 in Melbourne. The same report notes "(Galaxy) *has only 2,000 subscribers* (in Melbourne) *to date, well below projections of 50,000.*" Australis Media chairman Rodney Price has acknowledged the company's initial target of 200,000 subscribers (nation-wide in Australia) "*was probably a bit ambitious.*" No subscriber numbers are scheduled to be released until the end of June. Australian media are already predicting that unless Galaxy is able to line up "*major sporting events*" the growth of the service will be far below projections. Galaxy began running commercials on TV networks 7 and 10 in mid-May and is now distributing a Philips HG 180 video tape at A$5 per tape that includes a 15 minute "preview" of the Galaxy service. The intent is that blank tape buyers are getting a "bonus" in addition to the (almost) blank tape: An infomercial that describes the Galaxy service and includes "*ten opportunities to win free Galaxy installations*" by returning an enclosed postage paid card. The content of the infomercial is dated, having been largely prepared before the May 1st inauguration of the full 9 channel service.

Seven Network, the last of the major Australian media groups with no commitment to pay TV, agreed to become a part of the Optus Vision package May 19th. The financial arrangements are complicated and come to A$264 to be invested as follows: A$54m for 2% of Optus Vision (pay TV consortium) including a 30% share in the Optus Vision sports channel and an 8.3% share of the movie channel. Until July 1997, Seven has an option on an additional 13% share in Optus Vision at a cost of A$210m. For the sports channel, Seven is investing up to A$20m for 37.5% and other major stockholders include (US) ESPN (25%) and PBL (20%). Seven can hardly lose on the investment: They are guaranteed benchmark "homes passed", capital expenditures per home passed and operating income per home passed by July 1998. If Optus Vision fails to meet these guarantees, there is agreement that Seven can be bought out with interest. Neither Optus Vision nor competitor FoxTel are now expected to begin serving significant cable TV homes before the end of the 4th quarter this year. In a related announcement, Scientific Atlanta has been selected as the hardware supplier for the Optus Vision 750 MHz cable TV system now under construction. The Optus Vision system is using fibre-to-the-serving-area (FSA) plant design and coaxial cable for neighbourhood distribution.

New Zealand Telecom parent Bell Atlantic is reported ready to withdraw its applications before US FCC requesting official sanction to begin commercial Video Dial Tone (VDT) service. BA and other regional baby-Bell telcos have been pursuing FCC permission to inaugurate hybrid fibre optic plus coaxial cable pay TV networks in selected regions of US for three years, against massive pressure from cable TV firms and in opposition to many members of Congress. The decision to bow out of VDT delivery could have major ripple effects on Telecom NZ's final decision to roll out hybrid fibre and coaxial system(s) here. The hardware technology, software routines and the most important sources for programming required to make Telecom NZ a true broadband network provider would almost certainly originate in the US at the BA VDT facilities. Sources within BA point to technical problems related to software servers and acceptance that these problems will not sort themselves out "for several years." The firm also claims that when it began pursuing hybrid fibre optic / coaxial networks, *"switched digital video as a technology looked too far away to consider using."* And now, says BA, *"We believe this technology is coming on fast enough that it will actually make the original fibre and coaxial hybrid plant design obsolete within two to three years."* BA has been installing both fibre and coaxial plant in 6 regions of the US in anticipation of FCC approval for VDT. BA now believes that interactive switched digital video (SDV) will, in fact, not be field usable in consumer homes before *"very late 1996 or 1997."* Given this reality, BA plans to inaugurate sizeable fibre and coaxial networks in 1995 or 1996 are being scaled down and BA is expected to withdraw FCC applications. However, BA sources say this does not mean the firm will put off entry into the pay TV business for two years or more. To the contrary, BA says it will shift emphasis from fibre plus coaxial delivery to *"a wireless solution,"* or MDS/MMDS. In preparation for that possibility, BA and regional Bell NYNEX jointly agreed to invest US$100m in (US) wireless cable company CAI. The wireless company holds FCC licenses for most of the regional areas where BA had originally planned to inaugurate VDT. A BA spokesman related, *"wireless is a tool for early entry into markets and a bridge until we are ready with VDT. Wireless will supplement rather than supplant the VDT programme."* As CTD reported in our February 23 issue, Telecom NZ has been positioning itself in the New Zealand market to take back control of 8 MDS channels which it won in 1990 but subsequently leased out for various terms (6 of the 8 return to Telecom from the present lease holder in July 1996; the remaining 2 in July 2001). Telecom New Zealand, however, is subject to policy in this area set by BA and thus the direction BA takes in the US fibre versus wireless rollout of pay TV is very instructive to the New Zealand market.

Pacific Telesis (PT), the California baby Bell telephone company, is agreeing to pay US$120m to acquire a southern California "wireless cable" (MDS) company. The telephone company, sounding much like Bell Atlantic (see previous report), says Cross Country Wireless systems will allow it to reach "most of the 5,000,000 homes in Southern California" and the firm is forecasting that by utilising digital compression it will be able to deliver *"100 channels of television into these homes by the end of 1996."* PT, like Bell Atlantic, says this move will allow them to start in the pay TV business *"sooner than the technology of VDT will allow."*

Video Dial Tone backers in the US., aware they are unlikely to gain access to the present generation of cable and pay cable programming now largely managed from within the cable TV industry, have scored another start-up victory by talking Disney into a US$500m venture to jointly produce programming which will be available exclusively on VDT systems. Ameritech, BellSouth and SBC Communications are joining Disney and they hope to have "exclusively on VDT" programmes available by the middle of 1996. Ameritech hopes to have its first VDT systems functioning in small suburbs of Chicago and Detroit by early in 1996.

UIH, majority owner now of Kiwi Cable (Paraparaumu), has completed the initial installation of an MMDS system serving Tahiti and is now planning a new system for New Caledonia. "Noumea Cable TV" (actually a "wireless cable" system) will have 9 channels of programming, 8 delivered initially via S-VHS tape from Paris and the 9th to be CNN from satellite. Calling their Noumea business Societe Francaise des Communications et du Cable, the new firm will charge US$100 for installation and US$60 per month for the nine channel service hoping to be on air by the fourth quarter of this year. Two New Caledonia people hold a minority share: Jean Claud Racine and Didier Leroux.

Telecom New Zealand is expected to announce selection of their network integrator (lead contractor) for rollout of the long anticipated fibre optic network on June 10. The major feature of the fibre optic system will be greatly expanded bandwidth for business linking applications. Auckland, in particular, has a severe shortage of bandwidth within the core city (downtown) region and temporary solutions employing point to point low and medium power microwave frequencies have themselves been saturated as frequency congestion has become critical. It is further expected that the thrust of Telecom NZ 'PR' in announcing their first important fibre optic rollout will downplay the need for business district bandwidth and will highlight the more glamorous potential "pay TV" aspects of the system in the belief that the glitz surrounding pay TV will be more positive for Telecom's public stock value. An American veteran of pay TV, John Clark, has recently been hired as Managing Director of Telecom's Video and Information Service Unit. Clark comes from a position as senior marketing and programming VP for Crown Media, a cable MSO with (Telecom's release stated) "900,000 subscribers." Actually, Crown Media was rated as the 16th largest cable "MSO" (multiple system operator) in a May 1994 accounting of the US cable industry with 861,196 subscribers. By November 1994 Crown was reduced to #19 with 676,507 subscribers and in May 1995 Crown no longer owns cable TV systems having sold out to Charter Communications and Marcus Communications. At their "peak" Crown owned 1.55% of all cable TV subscribers in the US.

Cyberstar of New Zealand Limited (Nelson) and Barryvision Limited (Auckland) are two of the newest Network Operators (in the cable television field) in New Zealand. Both became effective May 19 under the Telecommunications Act of 1987.

TCI, world's largest cable TV operator and an investor in both Sky Network in New Zealand and Galaxy in Australia, has acquired 51% of Cablevision S.A., operator of Buenos Aires cable system with 400,000 subscribers. In a related action, TCI on May 4th, filed registration papers with the Securities and Exchange Commission to create Telecommunications International which will ultimately hold all of TCI's non-US interests (including, one assumes, those in New Zealand and Australia). International plans to offer up to 20% of the stock at around US$19 a share to the public, hold rest in TCI name.

Time Warner, which owns approximately 12.75% of Sky Network in consort with TCI, Bell Atlantic and Ameritech (the four all together own 51% through a separate jointly held corporation), is in the process of raising US$3B to reduce its present debt structure. To do this, Time Warner is selling off assets including cable TV systems in North America. but is hardly getting out of the cable TV business (the firm is the second largest cable operator in the world).

TERRESTRIAL BROADCASTING

Solomon Islands officials are considering four applications to establish the country's first terrestrial television service; TVNZ is one of the four firms in the race along with three Australian firms. The government hopes that winning applicant will have TV operating in the country by the end of this year. TVNZ has supplied occasional feeds of sporting events to one or two satellite equipped receiver locations in the Solomons in past years.

Regional television service ATV has completed installation of a relay transmitter (channel 48) at Pine Hill (Browns Bay) on Auckland's North Shore. The transmitter increases ATV reach by 30,000 potential viewers in a region where ATV has anticipated high viewership levels because of the social and economic levels of the region's population.

Pioneer low power (0.5 watt) school TV station CTV operated by the Media Studies Department of Pakuranga College (Bucklands Beach, Auckland) on channel 42 recently passed a milestone; the 300th telecast. The system inaugurated television in March 1993, is totally run by school students in the media studies programme, and produces local live school news reports for approximately 25 minutes each morning. The college is currently trialling a 2.4m satellite dish provided by Pacific Antennas (Whangaparaoa) and hopes to use their channel 42 transmitter to distribute satellite fed programming from sources such as Deutsche Welle to classrooms on the campus.

TVNZ has begun delivering NTL designed digital format receivers to affiliates of its Pacific Operations (network). Terrestrial TV stations in (the) Chatham Islands, Niue, Cook Islands, Nauru, Samoa and Vanuatu receive daily feeds from TVNZ via Intelsat 180 and most of the "affiliates" also receive S-VHS taped programme dubs from a combination of TV1, TV2 schedules. Satellite feeds from TVNZ (Auckland) have remained in analogue format while TVNZ's primary use of their Intelsat transponder has converted to incoming digital (BBC) programmes used for the regional TV stations and TVNZ news and sport departments. The continued use of analogue complicates their use of this Intelsat transponder and by converting their outward bound feeds to digital, TVNZ will improve the scheduling for the transponder use. Cook Islands Broadcasting was the first to receive the NTL designed receiver and this has given it access to the BBC feeds in addition to TVNZ service. The cost to TVNZ for NTL encoder was approximately NZ$100,000.

New Zealand On Air radio and television applications for funding deadlines have been set for the balance of 1995: July 14 (for August 14 and 15 meeting), September 15 (for October 16 and 17 meeting) and November 3 (for December 4 and 5 meeting). Television related funding applications to Jane Wrightson and radio applications to Brendan Smith (tel. 04-382-9524; Fax 04-382-9546).

Sky Network and BCL personnel are continuing in their co-operative testing of the Auckland (8 channel) MMDS transmitter on the Waiatarua transmission site, fuelling speculation that there are near term plans to put these television delivery transmitters into regular service (CTD February 23; p.2).

INTERESTED IN SATELLITES???

√-OUT our **SatFACTS Monthly** publication.

► From a "newsletter" last September to a full sized glossy cover monthly magazine with subscribers now in 24 countries world-wide!
► AND - the "official journal" medium for SPACE Pacific, the Pacific Ocean Region's trade association for designers, installers, sellers and programmers of DTH and cable/SMATV

$40 per year (inside NZ; US$40 outside)
sent fast post / airmail worldwide
the 15th of each month

ORDER: **SatFACTS Monthly** with cheque enclosed to:
SatFACTS, PO Box 330, Mangonui
Far North, New Zealand

SUBSCRIPTIONS TO: COOP'S TECHNOLOGY DIGEST

gives you the wide-screen perspective so necessary in the fast changing world of electronic technology.

► 10 issues per year, fast post / airmail
► NZ$250 from:

Robert B. Cooper, PO Box 330, Mangonui, Far North, New Zealand